

Stereo Cassette Deck

Operating Instructions

TC-RX410

Owner's Record

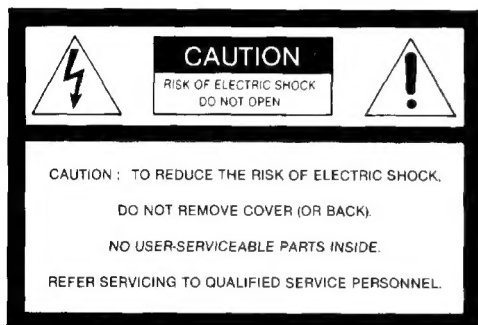
The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. TC-RX410

Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*The graphical symbols are on the rear enclosure.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the equipment with respect to the receiver
- Move the equipment away from the receiver
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

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Features

- **The Dolby HX PRO* system** to improve the linearity of the tape's high-range response during recording.
- **Cue & review and memory play functions** to provide easy access to a desired position.
- **B and C type Dolby NR* systems** to reduce tape hiss noise.
- The optional remote control unit allows various operations to be remotely controlled.

*Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Precautions

On safety

- Operate the unit only on 120 V AC, 60 Hz only.
- Should anything fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On operation

- When the unit is not being used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette, or if a cassette has been incorrectly inserted into the cassette holder.

On head cleaning

The heads and tape path should be cleaned after every 10 hours of operation. Dirty heads and a dirty tape path may cause:

- Loss of high frequency response
- Loss of sound volume
- Sound drop-out

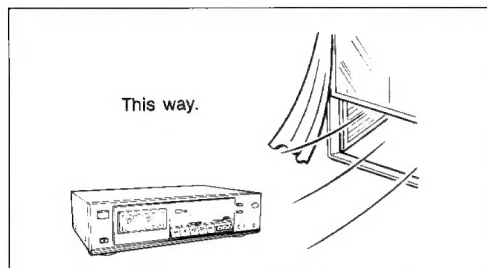
If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

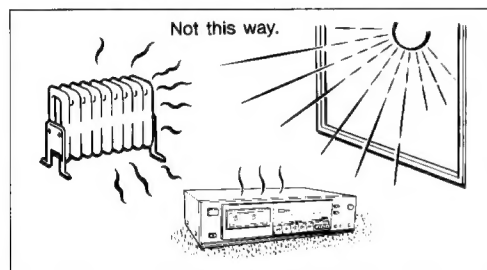
Installation

Notes on installation

Place the unit in a location with adequate air circulation to prevent internal heat build-up in the unit.



Do not place the unit on a soft surface, such as a rug that would block the ventilation holes on the bottom.



Install the unit with the front panel facing toward you.

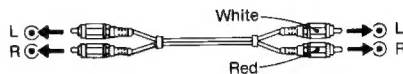
Do not install the unit:

- near heat sources such as radiators or air ducts.
- in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- in an inclined position.

Connections

Notes on Connections

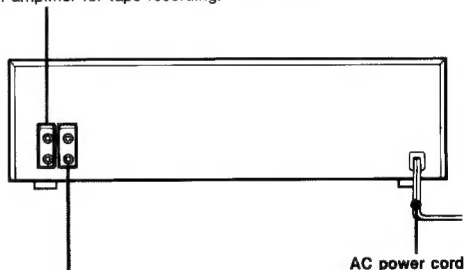
- Turn off the power to all equipment before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.



- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pick-up.

Identification of Rear Panel Parts

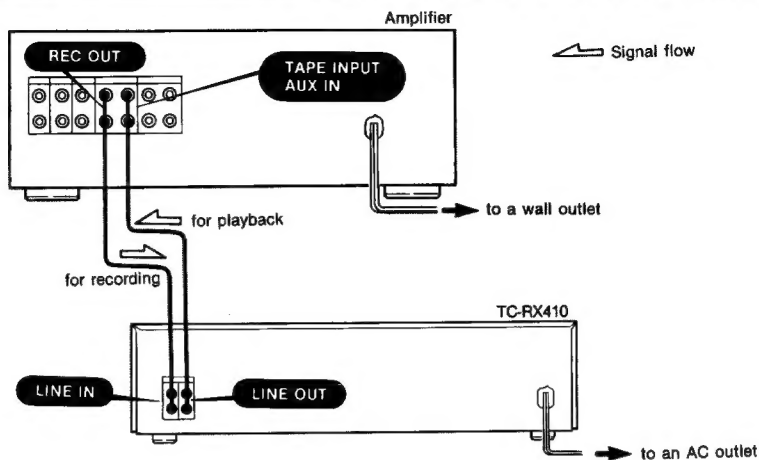
LINE IN (line input) jacks (phono jacks)
Connect to the tape outputs (recording outputs) of an amplifier for tape recording.



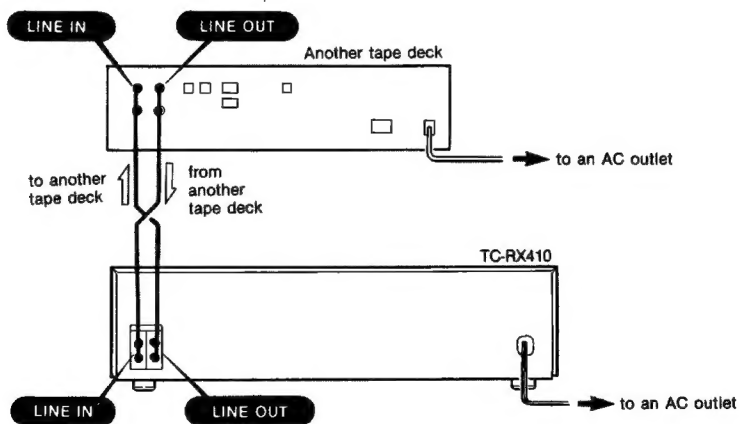
LINE OUT (line output) jacks (phono jacks)
Connect to the tape inputs of an amplifier for playback.

Do not throw away the carton and the packing material!
They will come in handy when transporting the unit or shipping it for servicing.

Basic Connection

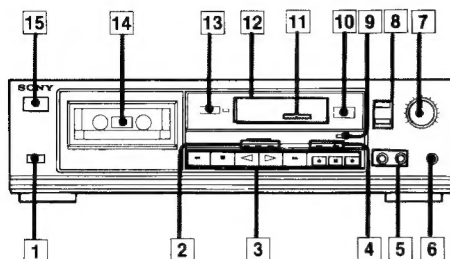


Connection for tape dubbing



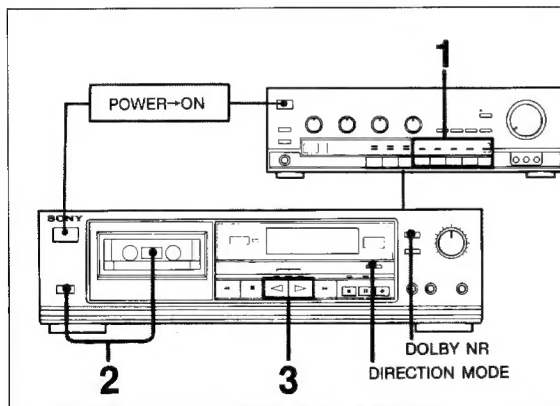
Identification of Front Panel Parts

Refer to the pages indicated in ● for details.

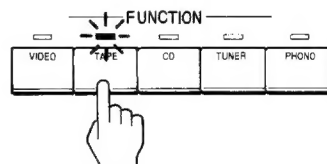


- 1 ▲ (eject) button
- 2 DIRECTION indicators
- 3 Tape operation buttons
 - ◀◀ (leftward fast winding) button
 - ▶▶ (rightward fast winding) button
 - ▶ (forward play) button
 - ◀ (reverse play) button
 - (stop) button
 - ⏸ (pause) button
 - REC MUTE (record muting) button ①
 - REC (record) button
- 4 Tape transport mode indicators (REC, PAUSE)
- 5 MICROPHONE jacks (phone jacks)
- 6 HEADPHONES jack (stereo phone jack)

Playback



1



How to select DIRECTION MODE

To play back one side, select .

To play back both sides continuously*, select .

*After playing back five times, the deck automatically stops.

What is the Dolby NR system?

The Dolby NR (noise reduction) system reduces tape hiss noise in low level high frequency signals by boosting these signals in recording and then lowering them in playback.

How to use the DOLBY NR switch

Set the DOLBY NR switch to the same position as was used when the cassette was recorded.

Dolby NR system	Switch setting	
	Upper switch	Lower switch
Dolby B	▲ ON	□ B-TYPE
Dolby C	▲ ON	▲ C-TYPE
Dolby OFF	□ OFF	Either position


7 REC LEVEL (recording level) controls ⑩

8 DOLBY NR switches ③

9 DIRECTION MODE selector ⑨, ⑩

10 Remote control sensor

You can remotely control this cassette deck with:

—A remote commander that has an  mark and comes with a Sony amplifier or receiver and which can be used to control a cassette deck.

—An optional Sony remote commander that has an  mark.

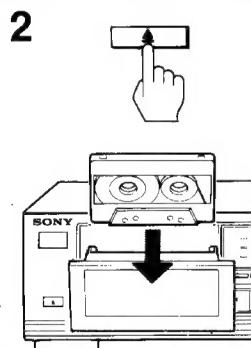
11 TAPE TYPE indicators

12 PEAK LEVEL METER ⑩

13 COUNTER and RESET button

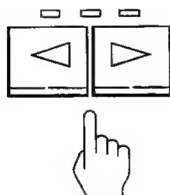
14 Cassette holder

15 POWER switch



3

From the front side: ►
From the reverse side: ◄



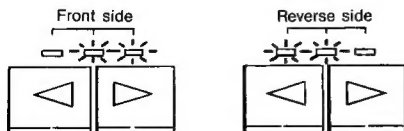
To stop playback, press ■.

To stop for a moment during play (only on deck B), press ■■.

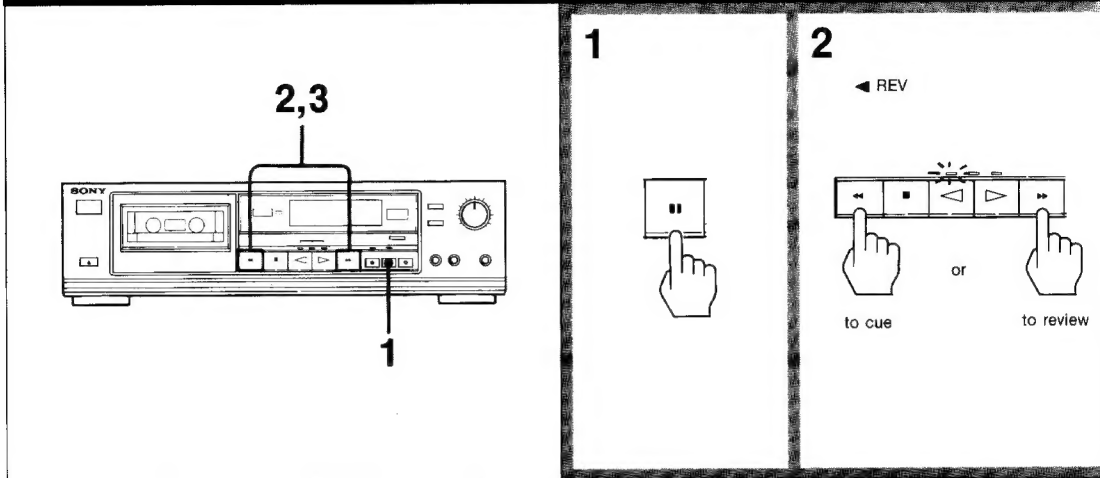
To restart play, press ■■ again.

Side of the cassette being played back

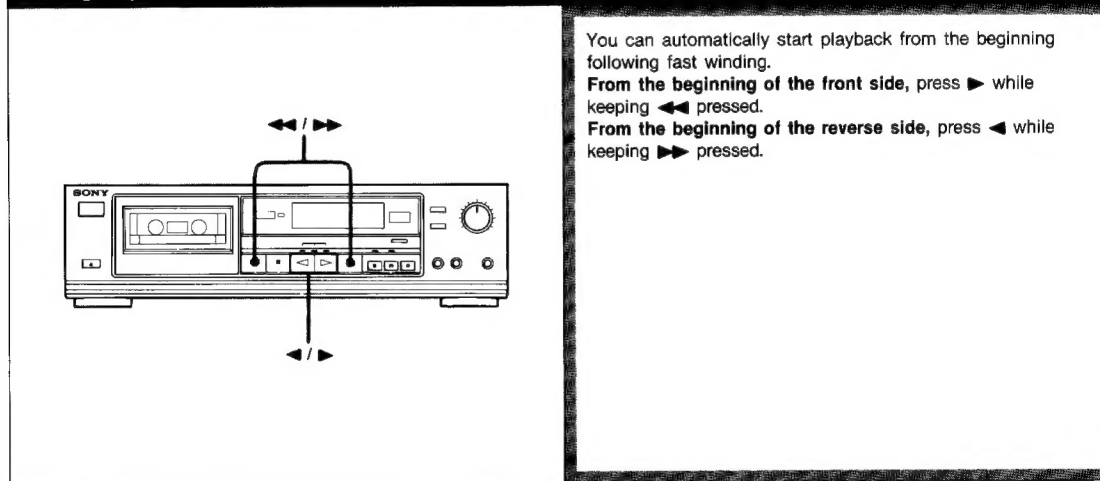
A DIRECTION indicator illuminates to indicate the side of the cassette being played back.



Locating a Desired Position—Cue & Review Functions



Starting Playback Automatically after Fast Winding—Auto Play



Is it necessary to set the tape type being used?

No. Because the unit has an automatic tape type detection system. In recording or playback of TYPE I (normal), TYPE II (CrO₂) and TYPE IV (metal) cassette tapes, this system automatically adjusts the equalization and bias current to the optimum level for the cassette used. The current tape type is indicated by the TAPE TYPE indicator.

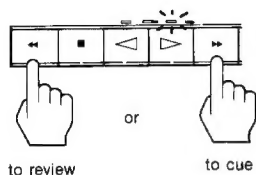
- Cassette tapes can be classified into four major types: TYPE I, II, III and IV.
- TYPE I, II and I cassette tapes can be used with this unit.
- Characteristics of different cassette tapes of each type may vary slightly depending on the manufacturer or grade.

8 The following reference table shows the classification of Sony cassette tapes.

Tape type	Tapes (C30–C90)
TYPE I (Normal)	SONY: EF, HF, HF-S, HF-ES Other TYPE I equivalent tapes (For 120 μs EQ, NORMAL BIAS)
TYPE II (CrO ₂)	SONY: UX, UX-S, UX-ES, UX-PRO Other TYPE II equivalent tapes (For 70 μs EQ, HIGH BIAS)
TYPE IV (Metal)	SONY: METAL-ES Other TYPE IV equivalent tapes (For 70 μs EQ, METAL BIAS)

3

► FWD



At the desired point, press ► or ◀.

Cassettes exceeding 90 minutes are not recommended except for long continuous recording and playback

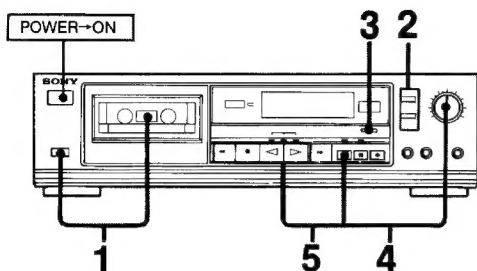
Cassettes exceeding 90 minutes use extremely thin tape which tangles easily when the tape transport is stopped and started frequently.

Cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures or high humidity.

Recording

When recording through the LINE IN jacks, make sure that the microphone is not inserted in the MIC jack. If the microphone is connected, the LINE IN jacks become non-functional.



How to use the DOLBY NR switch (Step 2)

See page 6.

How to select DIRECTION MODE (Step 3)

To record on one side, select \rightarrow (A).

To record on one side and then the other, select \leftrightarrow (B).

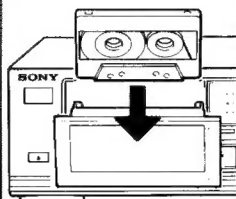
Even at the \leftrightarrow position, recording automatically stops when the tape reaches the end of the reverse side.

To start recording (Step 5)

To start recording from the front side, press \blacktriangleright while keeping \bullet pressed.

To start recording from the reverse side, press \blacktriangleleft while keeping \bullet pressed.

1



2

Select the DOLBY NR setting.

DOLBY NR
ON OFF

C B



How to start recording more precisely

- 1 Press \bullet .
- 2 Press \blacktriangleright or \blacktriangleleft , keeping \bullet pressed.
- 3 Adjust the recording level.
- 4 Press \bullet again at the desired point.

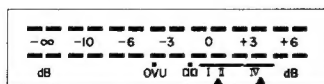
Recording is possible only on the side(s) shown by the blinking indicator(s)

If the cassette tab has been removed for the prevention of accidental erasure, the indicator will not blink when \bullet is pressed, but instead, the deck will start playback.

Recording Level Adjustment

Adjust the recording level according to tape type by observing the PEAK LEVEL METER, referring to the following diagram.

Recommended maximum PEAK LEVEL METER reading



For TYPE I (normal) or TYPE II (CrO₂) tape →

For TYPE IV (metal) tape →

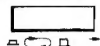
Tips on recording level adjustment

- Adjust the recording level as high as possible without causing distortion in the recorded sound. If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

3

Select the side(s) to be recorded.

DIRECTION MODE

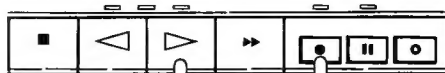


4

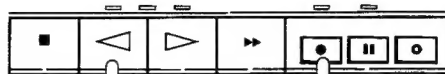


See "Recording Level Adjustment".

5



OR

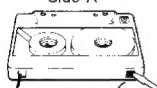


To stop recording, press ■.

Notes on cassettes

To protect side A recording

Side A

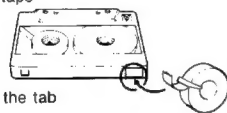


Tab of side B

Break out the tab of side A.

To reuse a cassette

Cover each slot with plastic tape



When using TYPE II (CrO₂) or TYPE IV (metal) cassettes

Be careful not to cover the detector slots which are necessary for automatic tape type detection.

TYPE II (CrO₂)



Detector slots

TYPE IV (metal)



Detector slots

Inserting a Blank Space during Recording —Record Muting

Using the ○ button during recording, you can insert a blank space in a tape. In addition, this function enables you to eliminate unwanted input by replacing it with a blank space.

1 While recording, press ○.

If you want the blank to be four seconds long, press and release the button immediately.

The PAUSE indicator will flicker and no incoming signals will be recorded on the tape.

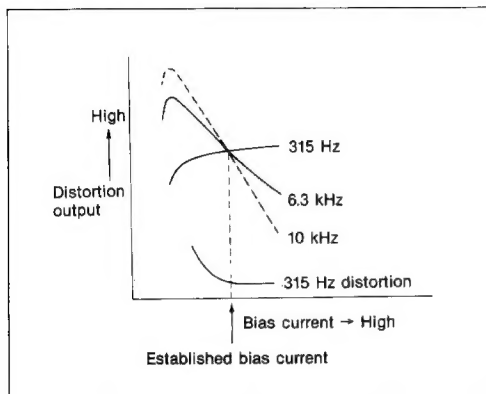
After four seconds, the tape will pause automatically and the indicator will light up.

If you want the blank to be longer, keep pressing for as long as you want. After four seconds, the indicator flickers more rapidly. When you release ○, the unit goes into the pause mode.

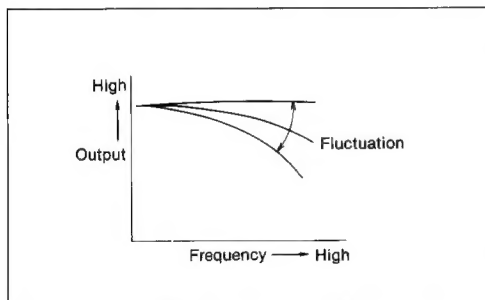
2 Press || to resume recording.

What is the DOLBY HX PRO System?

The DOLBY HX PRO System provides improved linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.



As shown above, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current. In conventional systems, the bias current is susceptible to variations in certain recording signals (see diagram below) which may cause fluctuations in frequency response, distortion, or other unwanted characteristics.




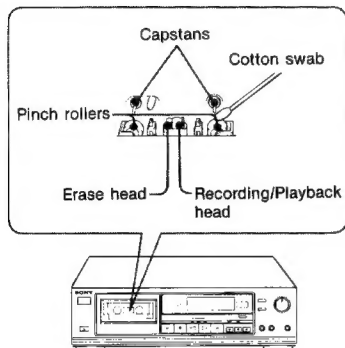
With the DOLBY HX PRO System, the effective bias is controlled in millisecond units to greatly reduce distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

Maintenance

Cleaning the Heads and Tape Path

Clean all surfaces over which the tape travels after every 10 hours of operation. To obtain high quality recording sound, however, cleaning before every recording is recommended.

- 1 Press  to open the cassette holder.
- 2 Wipe the heads, the pinch rollers and the capstans with a cotton swab slightly moistened with cleaning fluid or rubbing alcohol.



After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

Demagnetizing the Heads

The heads will become gradually magnetized over an extended period of use, causing hiss and loss of high frequencies. To avoid this, demagnetize the heads and all metal parts in the tape path using a commercially available head demagnetizer.

Make sure that the unit is turned off during the demagnetizing operation.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder, or solvents such as alcohol or benzene.

Specifications

Recording system

4-track 2-channel stereo
Fast winding Approx. 90 sec. (with C-60 cassette)
Bias AC Bias
Signal-to-noise ratio (NAB, at peak level)

	DOLBY NR switch		
Cassette	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	58 dB	65 dB	71 dB
TYPE II (Sony UX-S)	57 dB	64 dB	70 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

Total harmonic distortion

1.0 % (with Sony METAL-ES cassettes)

Frequency response

DOLBY NR OFF

- With TYPE IV cassette (Sony METAL-ES)
30–15,000 Hz (± 3 dB)
30–13,000 Hz (± 3 dB, OVU recording)
- With TYPE II cassette (Sony UX-S)
30–15,000 Hz (± 3 dB)
- With TYPE I cassette (Sony HF-S)
30–14,000 Hz (± 3 dB)

Wow and flutter

0.09% WRMS (NAB)

Inputs

Microphone inputs (phone jack)
Sensitivity 0.25 mV (-70 dB)
For a low-impedance microphone
Line inputs (phono jacks)

Sensitivity 77.5 mV (-20 dB)
Input impedance 50k ohms

Outputs

Line outputs (phono jacks)
Output level 0.44 V (-5 dB) at load impedance 47k ohms
Load impedance over 10k ohms
Headphones output (stereo phone jack)
Output level -28 dB at load impedance 8 ohms

General

Power requirements

120 V AC, 60 Hz

Power consumption

22 W

Dimensions

Approx. 430 \times 118 \times 295 mm (w/h/d)
(17 \times 4 $\frac{3}{4}$ \times 11 $\frac{3}{4}$ inches)

including projecting parts and controls

Weight

Approx. 3.9 kg (8 lbs 10 oz)

Supplied accessory

Connecting cord (2)

Design and specifications are subject to change without notice.

Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.

Before proceeding with these trouble checks, first check these basic points:

- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function buttons and tape transport problems

Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape. (page 11)
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise during fast winding	This depends on the cassette used and is not a problem.	—

Recording and playback problems

Symptom	Cause	Remedy
Auto reverse function does not operate.	DIRECTION MODE selector is set to $\square \rightarrow$.	Set DIRECTION MODE to $\square \leftarrow$.
Recording or playback cannot be made or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly. (page 5)
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions shown on page 13
Incomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switch.	When playing back, set the switch to the same position used in recording.
	The unit is placed near a television set.	Move the deck away from the television set.

Noise

Symptom	Cause	Remedy
Hum noise	The deck is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near equipment such as a television set or a color monitor, and the interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from television set or color monitor.
Oscillation occurs when trying to record from microphones.	The microphone is too close to the speakers.	Move it away from the speakers or reduce the amplifier volume.